

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANTS : CHRISTIANSEN ET AL. CONFIRMATION No.: 2876
SERIAL NUMBER : 09/097,383 EXAMINER: DAVID M. SHAY
FILING DATE : JUNE 16, 1998 ART UNIT: 3735
FOR : LIGHT PULSE GENERATING APPARATUS AND COSMETIC
AND THERAPEUTIC PHOTOTREATMENT

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief - Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Further to the Notice of Appeal dated **October 7, 2008**, Appellants hereby submit this Appellants' Brief on Appeal pursuant to 37 C.F.R. § 41.37.

The Director is authorized to charge the fee for filing an Appeal Brief pursuant to 37 C.F.R. § 41.20(b)(2), as well as any additional fees that may be due, or credit any overpayment of same, to Deposit Account No. [033975] (Ref. No. [011765-0254781]).

Appeal Brief Under 37 C.F.R. § 41.37

I. Statement of Real Party in Interest

The real party in interest for this Appeal and the present application is Ellipse A/S, formerly called Danish Dermatologic Development A/S, by way of an Assignment recorded in the U.S. Patent Trademark Office at Reel/Frame 9435/0734.

II. Statement of Related Cases

This application was previously appealed to the Board, Appeal No.: 2006-3215. The Board issued its opinion on September 13, 2007 reversing the Examiner's rejection of claims 1-3, 8, 10-15, 18 and 23-25.

III. Jurisdictional Statement

The Board has jurisdiction under 35 U.S.C. § 134(a). The Examiner mailed a final rejection on June 11, 2008, setting a three-month shortened statutory period for response. The time for responding to the final rejection expired on September 11, 2008. A Notice of Appeal and a request for a one-month extension of time under rule 136(a) was filed on October 7, 2008. The time for filing an Appeal Brief is two months after the filing of the Notice of Appeal such that the initial period for filing an Appeal Brief was December 7, 2008, this appeal brief thus being filed with a one-month extension of time.

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VI. Status of Amendments

A final rejection was issued on June 2, 2008. No amendments were filed after the final rejection. A Notice of Appeal was filed on October 7, 2008.

VII. Grounds of Réjection to be Reviewed

1. Rejection of claims 1 and 23 under 35 U.S.C. §103(a) over Eckhouse (U.S. Patent 5,620,478) in combination with Berry (U.S. Patent 1,677,016).

2. Rejection of claims 1-3, and 8 under 35 U.S.C. § 103(a) over Eckhouse in combination with Berry and further in view of Gustafsson (U.S. Patent 5,320,618).

3. Rejection of claims 10-15, 24 and 25 under 35 U.S.C. § 103(a) over Eckhouse in combination with Berry and Gustafsson and further in view of Anderson et al. (U.S. Patent 5,735,844) and Optoelectronics (“High Performance Flash and Arc Lamps” from PerkinElmer).

4. Rejection of Claim 18 under 35 U.S.C. § 103(a) over Eckhouse in combination with Berry and Gustafsson and further in view of Vassiliadis et al. (U.S. Patent 3,703,176).

5. Objection to the specification on the ground that the claims contain various functional recitations that are of the form to constitute means plus function recitation under section 112, sixth paragraph, and the specification fails

to provide proper antecedent basis for the claimed subject matter contrary to 37CFR 1.75(d)(1) and MPEP § 608.01(o).

6. Objection to claim 3 as being of improper form because being dependent on a means plus function claim (claim 2), it defines substantial structures contrary to MPEP § 2181.

VIII. Statement of Facts

Appellants' Specification discloses an apparatus for pulsed light for treatment of a human or animal body. The apparatus, as depicted in Figure 2, includes a light source 13 within a housing 20. The light from the light source 13 is directed through the infra red filter comprised of circulating water 24 and a long wave pass filter 25 (Specification pages 19-20, Figure 2).

The circuit for driving the apparatus is depicted in Figure 1 and includes a PC 10 in communication with a power supply 12 and an IGBT switch. The power supply 12 charges a capacitor C to a voltage set by the PC and thereby powers the light source 13 (Specification page 18). The IGBT switch is also controlled by the PC and is capable of changing from non-conductive to conductive states thereby controlling the current sent to the light source. The light power output of the light source 13 is dependent on the electrical power input to the lamp (Specification page 6). As the PC controls the conductivity and nonconductivity of the IGBT switch and the voltage of the capacitor C, the PC

controls the power input to the lamp, and thereby the time weighted average light output.

Appellants' claims 1-3, 8, 10-15, 18 and 23-25 are pending. Claims 1-3, 8, 10-15, 18 and 23-25 stand rejected and are on appeal. The claims on appeal are set forth in the attached Appendix. Claim 1 is independent. Claims 2, 3, 8, 10-15, 18, and 23-25 all depend from claim 1.

Claims 1-3, 8, 10-15, 18 and 23-25 are described in the attached Appendix, referring to the specification, drawings, and reference numerals. This description is intended to facilitate an understanding of the claims by the Board members and is not intended as a comprehensive claim construction, such as used in the context of an argument of invalidity or infringement. Any reference to more than one reference number or character for any particular claimed element or limitation is illustrative only and is not to be construed as an admission that the claims are limited to any, or all, of the particularly disclosed embodiments.

Applicants' independent claim 1, the sole independent claim, recites an apparatus for pulsed light cosmetic or therapeutic photo-treatment of the human or animal body (Figures 2 and 3; page 19, line 21 – page 21, line 5), comprising a housing (Figure 2, reference number 20; page 19, line 23), a gas filled arc lamp light source (Figures 1 and 2, reference number 13; page 19, lines 2 and 23) within said housing operable to produce a pulsed light output (Figures 6(a)-

(c); page 22, lines 1-29), a power supply (Figure 1, reference number 12; page 18, line 29) connected to said arc lamp light source for operation thereof to produce a light output duration of from 10 to 70 msec, a light output aperture (Figure 2 and 3, reference number 22; page 20, lines 1-2) defined by said housing, and a filter system (Figures 2 and 3, reference number 25; page 20, lines 19-27) for filtering undesired light output wavelengths from said pulse to produce a filtered light pulse for application to said body, at least part of said filter system being interposed between said light source and said aperture, wherein said filter system consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water (Figures 2 and 3; page 20, lines 4-5), said water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to said output aperture, wherein said filtered light pulse has an energy of at least $250 \text{ J/cm}^2/\text{sec}$.

This appeal is the second such appeal filed during this applications' prosecution. Appellants' filed the above-referenced application on June 16, 1998. After a Final Action was issued on March 2, 2005, Appellants filed the first Notice of Appeal May 31, 2005 appealing the rejection of claims 1-3, 8, 10-15, 18 and 23-25. The Examiner had rejected claims 1-3, 8, 10-15, 18 and 23-25 in the March 2, 2005 Final Action over a combination of the references Eckhouse, Gustafsson, Anderson, and Optoelectronics. In a decision rendered on

September 13, 2007, *Ex parte Kare Christiansen and Hugin Hansin Appeal*

2006-3215, copy attached, the Board of Patent Appeals and Interferences (the ‘Board’) reversed the Examiner’s rejection. Consequently, on November 28, 2007, the Examiner issued a new rejection of claims 1-3, 8, 10-15, 18 and 23-25 based on the same references used in the March 2, 2005 Final Action: Eckhouse, Gustafsson, Anderson, and Optoelectronics along with an additional reference not previously relied on by the Examiner, Berry. Following the Final Action of June 11, 2008 and the Advisory Action of September 17, 2008, Appellants filed a Notice of Appeal on October 7, 2008.

In the first appeal to the Board, the Board held that the invention of Claim 1 was not anticipated by Eckhouse and was not obvious over a combination of Eckhouse and Gustafsson (See Decision On Appeal 2006-3215, page 7, line 10 – page 8, line 19). Eckhouse was considered by the Board to disclose two embodiments, the first (Figure 1) showing apparatus failing to satisfy claim 1 in that it lacked the use of fluid in this embodiment for cooling or for any other purpose and noted that this embodiment did not disclose the use of high repetition rates. Eckhouse’s second embodiment (Figure 4) was held by the Board to disclose a light source and an optical fiber, with water therebetween, the water being very effective for cooling the light source if high pulse repetition rates were used. The fluid also had the benefit of reducing losses associated with glass to air transitions. The Board further held that the water

could operate as a filter (See Decision On Appeal 2006-3215, page 4, line 18 – page 6, line 14).

Gustafsson was considered by the Board to disclose a device for treatment of skin. As depicted in Gustafsson's Figure 1, a base model includes a light source 2 connected to a lens 3 and light is directed through the lens 3 and a fiber optical cable 4 to a second lens 5. In the preferred embodiment, the device includes light sources 2 covered by pipe shaped covers 21 which are connected to one another serially through leads 22 (Gustafsson, Figures 1 and 3). A cooling system is included which consists of a pump 84, conduit 82 and outlet 83 (See Decision On Appeal 2006-3215, page 6, lines 3-14).

It was held by the Board that the combination of Eckhouse and Gustafsson did not make the invention obvious in particular because Eckhouse did not disclose with respect to Figure 1 that cooling was needed. The disclosure of cooling in relation to Figure 4 was seen as suggesting indeed that for Figure 1 cooling was not needed. Further, the mention of high repetition rates in Eckhouse in connection with cooling in Figure 4 was seen as confirming that cooling would not be needed in an apparatus as per Figure 1 because that would not use high flash repetition rates. Thus, the Board concluded that the Examiner erred in determining that it would have been obvious to modify the device of Eckhouse' figure 1 to include cooling water, even taking Gustafsson

into account (See Decision On Appeal 2006-3215, page 7, line 10 – page 8, line 19).

The Examiner now relies on Eckhouse (seemingly Eckhouse Figure 1) and takes the position that Berry makes it obvious to incorporate water cooling into Eckhouse's Figure 1 embodiment (See Final Action, page 5 last paragraph). Berry discloses an internal applicator of UV light essentially similar to that of Eckhouse Figure 4. Like the apparatus of Figure 4 of Eckhouse, the lamp in Berry is surrounded by a water jacket which acts as a filter and provides cooling.

The Examiner alleges that it would be obvious to employ the cooling system of Berry in the device of Eckhouse because Eckhouse teaches that it is important to keep the tissue surface cool (See Final Action, page 5 last paragraph).

The references Anderson, Optoelectronics, and Vassiliadis are relied upon by the Examiner to reject additional features recited in Appellants' dependent claims.

IX. Argument

A. Claims 1 and 23 are not obvious over Eckhouse in view of Berry

In the previous appeal 2006-3215, it was held that the invention as presently claimed was not obvious over Eckhouse in view of Gustafsson. In that decision, the Appeal Board held that Eckhouse discloses two relevant embodiments (See Decision On Appeal 2006-3215, page 4, line 18-page 6, line 2). The embodiment of Eckhouse Figures 1 and 2 does not have any fluid present for cooling or any other purpose, so it does not disclose the water acting as a filter for the light output of the claimed device required by the Appellants' claims. A water filter is disclosed in connection with a second embodiment with reference to Eckhouse Figure 4, but that embodiment does not have a housing or a light output aperture defined by the housing as claimed.

Berry is cited as teaching an arc lamp using water to filter infra red light and to cool the lamp as well as an applicator with a convex tip. The Examiner alleges that it would have been obvious to employ the cooling system of Berry in the device of Eckhouse (presumably the Figure 1 and 2 embodiment of Eckhouse) since Eckhouse teaches that it is important to keep the tissue surface cool (See the June 11, 2008 Final Action at page 5, last paragraph).

The combination of Eckhouse and Berry, as discussed below, is fatally flawed. The purpose of the Eckhouse apparatus is to cause heating. That is all the Eckhouse device is for. By causing heating it produces various therapeutic effects, depending on which skin or internal structures are targeted. All the wavelengths employed in Eckhouse are employed for their heating ability. This applies both to the infra-red and to the visible wavelengths. All the light applied using the Eckhouse apparatus (except for what is reflected from the skin) serves for heating. All of the energy of the light is converted to heat, because there is nowhere else for it to go. Thus, the heating effect in Eckhouse is not due to only infra red light and the heating effect is not in any way undesired.

There is no particular logic in Eckhouse for filtering out certain wavelengths just because they are called by Berry 'heat radiations' when heating is the essential purpose of the apparatus. The situation in Berry is quite different. While the specific purpose of the Berry apparatus (in terms of the effect it is supposed to provide) is not clearly stated, one can see that the apparatus is essentially for applying ultra-violet radiation to a wound or body cavity (See Berry, col. 1, line 10). There is no disclosure in Berry that the desired effect of the UV or any other radiation is to produce heating. In fact, Berry provides some implication that heat 'radiations' are not wanted. There is however no suggestion in Berry that the unwanted heat radiations have any special tendency to heat a skin surface more than any other structure. Ultra-

violet light is of course different from longer wavelengths of light in that the energy contained in each photon is greater and is so great that it can cause molecular changes. In particular, it can kill bacteria. Given the reference to wounds, this appears to be what Berry has in mind.

It should also be noted that Berry is describing a device for internal treatment. When Berry refers to heat radiations, Berry is not referring to radiations having a particular tendency above others to heat the surface of skin. The Examiner asserts that 'Berry contemplates using the water for the alternative or additional purpose of blocking the transmission of heat to the surface of the tissue' (See the June 11, 2008 Final Action at page 3, lines 5-11). However, Berry actually says nothing about the surface of any tissue. Nothing is said in Berry about the need to keep 'heat radiations' away from the surface of tissue as opposed to its interior. Infra red wavelengths will contribute to heating the interior of tissue in Berry without having the bactericidal effect that Berry presumably desires to achieve by the use of UV, so infra red may be undesirable for Berry for reasons that do not readily cross over to Eckhouse.

Again, the purpose of the Eckhouse apparatus is to cause heating. Figure 1 of Eckhouse discloses an apparatus for producing heating, either of the skin surface for evaporation of the skin (See Eckhouse, col. 7, line 34) or of deeper structures within the skin like blood vessels in vascular disorders. For both purposes however, heating of the target is the aim and objective of Eckhouse.

When treating deeper lying structures such as blood vessels, excessive heating of the skin surface will be undesirable and Eckhouse teaches that it may be avoided primarily by control of the pulse width (See Eckhouse, col. 7, lines 1-65). However, Eckhouse describes that one can measure the skin temperature via infra-red emission in real time, with the implication that if the temperature rises too high, one can terminate the treatment. There is no suggestion that if the temperature is too high, this might be handled by removing certain wavelengths.

Since the purpose in Eckhouse is heating, there is no teaching that wavelengths should be avoided on the basis of their general propensity to heat. According to Eckhouse, most of the energy of the lamp is emitted in the range of 300-1000 nm (infra-red starts at about 750 nm) (See Eckhouse, col.5, line 25). According to Eckhouse, in some procedures it is desirable to use most of the spectrum, with only the UV portion being cut off (See Eckhouse col.5, line 50). Removal of IR wavelengths for such 'certain procedures' is therefore clearly contraindicated and taught against.

For other procedures, Eckhouse indicates here that one may use 50-100 nm band width filters and low cutoff filters in the visible and UV portions of the spectrum. Again, there is no suggestion that infra red light needs filtering out. Examples of wavelength ranges to use are given in Eckhouse at column 11. Some of these are narrow, e.g. 520 nm-650 nm. If that were used, all the infra-

red (>750 nm) would be removed, such that a water filter would be redundant in that respect. Some ranges are broad, e.g. 600-1000 nm. Most of that light in the infra-red spectrum, so if it were thought that ‘heat radiation’ in Berry meant infra-red (as per the Examiner, page 3) then use of a filter to take it out would be seen by the Eckhouse reader to be wholly inappropriate.

In the Examiner’s reasons for continuing rejection in the Advisory Action of September 17, 2008, Eckhouse column 2, lines 35-38 is cited for the proposition that for treating external skin disorders and vascular disorders, a wide band electromagnetic radiation that covers the near UV and the visible portion of the spectrum would be desirable. Based on this, the Examiner contends that one of ordinary skill in the art would be led to provide a filter such as that of Berry which would filter out the longer, non-visible wavelengths.

However, this passage of Eckhouse by no means suggests a need to remove longer wavelengths. The stress is on the usefulness of including all of the near UV and visible, not on avoiding infra red.

The Examiner takes the quoted teaching of Eckhouse out of context. This passage is part of Eckhouse’ discussion of the demerits of the prior art, which used lasers (monochromatic light sources – see column 2, lines 4-6). Rather than being concerned with the removal of certain wavelengths, this passage is

explaining why a broad range of wavelengths is desirable. Eckhouse is not concerned with teaching the desirability of taking any steps to remove infra red.

Indeed, the immediately preceding paragraph (column 2, line 13 onwards) specifically explains that wavelengths up to 1000 nm are desirable for obtaining penetration and heating. That 1000 nm limit is also not implying a need to remove wavelengths above that. It is just the limit of the range that Eckhouse expects to get from his lamp, as explained further below.

As remarked above, there is nothing in Berry to suggest that infra red wavelengths are more prone to heat a skin surface than other structures. The reader of Eckhouse would also not be given the impression that infra red wavelengths were a particular problem as regards the heating of the skin surface. Indeed, the Eckhouse reader would understand the exact opposite. The degree to which applied light penetrates more deeply through the skin to heat deeper structures is dependent not only on the pulse width as described at column 7 of Eckhouse, but also on wavelength because this governs the degree of scattering referred to at column 7, line 2 of Eckhouse.

The Examiner has argued at page 4, final paragraph in the Final Action, that the removal of long wavelengths is not contraindicated for using the Eckhouse Figure 1 apparatus to provide deeper penetration, for example for the treatment of blood vessels using long pulses. However, it is common

knowledge that short wavelengths are more scattered than longer ones, so that it is long wavelength light that can penetrate more deeply to reach blood vessels.

It is the short wavelengths that need to be filtered out to prevent superficial skin heating by scattering close to the skin surface. This is taught by Eckhouse itself at column 2, line 27 onwards: *'Longer wavelengths up to 1000nm are also effective since they can penetrate deeper into the skin, heat the surrounding tissue and ...contribute to heating the blood vessel..'* Thus, for deeper penetration, the removal of longer wavelengths is indeed contraindicated.

Eckhouse' reference to wavelengths up to 1000nm is not to be seen as a suggestion that longer wavelengths are not wanted so much as a reference to what is available from the lamp. This is confirmed by Eckhouse at column 5, lines 24-25: *'Typically, most of the energy is emitted in the 300 to 1000 nm wavelength range'*. Accordingly, removal of longer wavelengths is indeed contraindicated in Eckhouse.

It may also be noted, that the areas below the skin that Berry is seeking to avoid heating by removal of 'heat radiation' are the very ones that Eckhouse would be trying to heat when using long pulses to treat deeper lying blood vessels. Accordingly, it is submitted that the combination the Examiner seeks to make between Eckhouse' desire to avoid excessive heating of the skin surface and Berry's removal of heat radiation is completely artificial and erroneous.

Eckhouse does of course contain specific directions for optical filtering suitable for applying the apparatus to various clinical purposes and situations. However, the use of water as a filter would be inappropriate for these applications. Thus, at column 5, lines 45 onwards, Eckhouse contains directions to use bandwidth filters and low cut off filters as well as neutral density filters. UV can also be removed by the use of a fluorescent material surrounding the flashlamp tube to convert UV to visible light.

At no point however does Eckhouse teach the desirability of removing infra red radiation or a purpose for doing so. Rather, the stress is on the usefulness of the 500 nm - 650 nm wavelength band and methods for obtaining maximum output in that range. Thus, column 2 teaches the relevance of these wavelengths, but states that longer wavelengths are useful too, right up to the limit of 1000 nm imposed by the light output of the flashlamp. Column 5, discussing filtering, states that one can use most of the spectrum with only the UV portion cut off. Alternatively, it states that 'for deeper penetration' one can use narrower bandwidths. However, one of ordinary skill in the art understands that deep penetration is associated with the use of longer wavelengths, so this is not an teaching to cut off infra red.

The long wavelength limit imposed by the flashlamp is further discussed at column 14, where control of the wavelength output through variation in the voltage and/or current supplied is considered. Here there is mention of

enhancing the range of 800 nm – 1000 nm (line 34), or 700 nm -1000 nm (line 48) or of boosting the output between 500 nm -650 nm (line 42). The emphasis is always on getting enough light, not on discarding it by filtering except in the unwanted UV portion. Nowhere is there a suggestion of a need to remove light in the infra red range, and the use of 1000 nm as a limit in certain ranges is not a suggestion to remove light above 1000 nm. That is simply the range within which Eckhouse expects a useful amount of light to be available.

The Examiner in the aforesaid Advisory Action stated in connection with this use of a fluorophore: *‘Eckhouse discusses treatment with wavelengths in the bandwidth 500-650nm, the output in this range is increased by using a phosphore which converts the UV light into radiation at this waveband See column 5, lines 56-63, but an additional means (such as a filter as taught by Berry must be employed in order to remove the infra red wavelengths since these do not interact with the phosphore’.*

No such ‘additional means’ is disclosed by Eckhouse. The Examiner interprets the reference to the range of 500 nm – 650 nm as meaning that all the light energy is present in this range, and so something must have been done to remove the rest (See September 17, 2008 Advisory Action). This is, however, a completely wrong interpretation. This passage is concerned only with boosting the light in the 500 nm - 650 nm range by robbing energy from the UV and converting it. The passage says nothing and implies nothing about the light that

was present initially that had a wavelength of more than 650 nm. The idea is simply to get more useful energy out of the lamp and the significance of the 500 nm – 650 nm range is purely that this is the band in which the extra light is generated. The Examiner's implied infra red filter is an illusion.

The Examiner goes on to say : *'Thus, while Eckhouse does contain teachings, as pointed out by the Applicant, wherein it is desireable to employ the infrared wavelengths produced by the lamp, there is also taught applications wherein the infrared light is not desired'.*

It is submitted that the Examiner has failed to substantiate this by pointing to any treatment regime in Eckhouse where infra red is disclosed to be undesirable. If this comment was based on the passage discussed above relating to the conversion of UV, the conclusion is wholly unjustified. That passage says nothing about a lack of desire for infra red.

The second line of argument advanced by the Examiner is that avoiding the application of infra-red radiation would avoid the risk of defeating the skin temperature monitoring device of Eckhouse as would supposedly occur if applied infra-red radiation were reflected into the monitoring device (See the June 11, 2008 Final Action at page 3, lines 2-20). This line of argument is pure speculation on the part of the Examiner and is contradictory to what Eckhouse actually teaches to be the case. Eckhouse indicates that the measurement of the

temperature from emitted infra-red radiation is 'easy' (See Eckhouse, col.6, line 64). Removing part of the therapeutic light would hardly seem to be an obvious course of action to tackle a problem which is not disclosed to exist, or rather which is actually disclosed not to exist. Thus, Applicants submit that the Examiner was equally incorrect to seek to link the temperature monitoring of Eckhouse with Berry's removal of heat radiation.

The Examiner contends on page 3 of the Final Action that he has 'established a proper motivation for combination and has also 'established a basis for obviousness under additional rationales, including simple substitution for one known element for another to obtain predictable results, use of known technique to improve similar device in the same way....' (See Final Action page 3, lines 21-22). Applicants submit that one cannot reasonably describe the devices of Eckhouse Figure 1 and Berry as 'similar.' The device of Eckhouse is for heating skin surface or below surface structures to cause significant and visible change through the effect of heat, whether by evaporating the skin surface to remove blemishes thereon or by heat coagulating blood vessels below the surface. Berry shows a device which is for an undisclosed purpose to which heat is clearly inimical. Berry teaches that the preferred radiation for this undisclosed purpose is UV radiation. Eckhouse teaches that the only form of radiation it is necessary to exclude and remove is UV radiation. The teachings are polar opposites. Moreover, the 'simple substitution' of one known element

for another to obtain a predictable result is not obvious unless the predictable result is one which the skilled artisan would understand as desirable in the context of the primary reference. Yet here, the filtering out of heating radiation is contrary to Eckhouse purpose of heating and contrary to his indication that wavelengths up to 1000 nm are specifically desirable.

Moreover, the Examiner fails to point out what in Eckhouse is being substituted. Substitution implies replacing an element with an alternative taken from another reference. Here, the Examiner is simply adding the water filter from Berry, not substituting something disclosed by Eckhouse with the water filter. In particular, Eckhouse discloses no infra red removal filter of its own to be substituted by that of Berry.

In this regard, it is submitted that the Examiner has not given proper deference to the decision in the previous appeal. There the Board considered whether it was obvious to import into Eckhouse the cooling water shown in Gustafsson. The Board rejected that contention on the basis that Eckhouse does not disclose in relation to Figure 1 a need for cooling. Similarly, Eckhouse does not disclose in relation to Figure 1 a need for infra red removal.

Thus, for at least the above cited reasons, Eckhouse and Berry fail to disclose all of the elements recited in applicants' claimed invention. Further, Eckhouse and Berry fail to provide a basis to establish obviousness under

additional rationales, including simple substitution for one known element for another to obtain predictable results, use of known technique to improve similar device in the same way, applying a known technique to a known device ready for improvement to yield predictable results, obvious to try, or the presence of a teaching, motivation, or suggestion.

B. Claims 1-3, and 8 are not obvious over Eckhouse in combination with Berry and further in view of Gustafsson

Claims 1-3 and 8 have been rejected as being unpatentable over Eckhouse in combination with Berry and Gustafsson. The Examiner alleges that it would be obvious to employ the water cooled lamp of Gustafsson in an apparatus according to Eckhouse that has been modified already according to Berry (See Final Action page 6, first paragraph). The combination with Gustafsson adds nothing to the merits of the rejection based on Eckhouse and Berry alone, and it contradicts what was found by the Board of Appeals in the above referenced previous appeal.

The combination of Eckhouse, Berry and Gustafsson cannot stand unless it is obvious to combine Eckhouse with Berry in the first place. If the Examiner is basing the rejection on the following combination of having modified Eckhouse Figure 1 according to Berry for wavelength filtration reasons one then has an apparatus in which the lamp has water interposed between it and the light

outlet, but without the water touching the lamp (as in Berry Figure 1), and one might increase the cooling effect of the water on the lamp by actually placing the lamp in the water as in Gustafsson Figure 3, that rejection cannot stand unless it is obvious to combine Eckhouse with Berry in the first place. For the reasons given above, that is clearly not obvious.

On the other hand, if the Examiner is basing the rejection on the allegation that it is obvious that Figure 1 of Eckhouse would benefit from water cooling (so that one might introduce this from Berry and then 'improve' on it from Gustafsson), that is clearly contrary to the findings of the Board, which found that, by implication, Eckhouse actually teaches the opposite ('the lack of disclosure of cooling water in connection with the embodiment depicted in Figure 1 would appear to indicate that no cooling is necessary in regard to the embodiment of Figure 1.')

Thus, for at least the above cited reasons, Eckhouse, Berry and Gustafsson fail to disclose all of the elements recited in applicants' claimed invention. Further, Eckhouse, Berry and Gustafsson fail to provide a basis to establish obviousness under additional rationales, including simple substitution for one known element for another to obtain predictable results, use of known technique to improve similar devise in the same way, applying a known technique to a known device ready for improvement to yield predictable results, obvious to try, or the presence of a teaching, motivation, or suggestion. Thus,

reconsideration and withdrawal from this rejection, and allowance of claims 1, 3 and 8 is respectfully requested.

C. Claims 10-15, 24 and 25 are not obvious over Eckhouse in combination with Berry and Gustafsson and further in view of Anderson and Optoelectronics

All of these claims are dependent on claim 1. As argued above ,therefore, they are patentable over the combination of Eckhouse, Berry and Gustafsson for the reasons set forth above, as well as for their recitations of additional patentable features. It should be noted that Anderson and Optoelectronics do nothing to strengthen the objection to claim 1. That alone is sufficient to defeat the objection against these claims.

D. Claim 18 is not obvious over Eckhouse in combination with Berry and Gustafsson and further in view of Vassiliadis

Claim 18 is dependent on claim 1. Therefore, claim 18 is patentable over the combination of Eckhouse, Berry and Gustafsson for the same reasons set forth above, and for additional recitations. It should be noted that Vassiliadis does nothing to strengthen the objection to claim 1. That alone is sufficient to defeat the objection against this claim.

E. The specification is not deficient as failing to provide proper antecedent basis for the claimed subject matter

Objection was taken to the specification as allegedly failing to provide proper antecedent basis for the claimed subject matter as regards the phrase ‘said flow path forms a closed circuit’. This objection followed a reference to MPEP 2181 in which the Examiner noted that the claims contain various functional recitations that are of the form to constitute a means plus function recitation under section 112, sixth paragraph, namely ‘means for defining a flow path for said water’ and ‘means is provided for adjusting the time weighted average light power output...’ (See Non-Final Action November 28, 2008, page 4, second paragraph).

As regards recitation of ‘said flow path forms a closed circuit’, Applicants submit that this recitation is fully supported structurally throughout the specification, including page 14, line 20 – page 15, line 23 and page 19, line 21 – page 20, line 2 and Figure 2. As discussed in those sections and with reference to Figure 2, lamp 13 is surrounded by chamber 24, in which fluid is able to circulate continuously around lamp 13, thereby forming a closed circuit.

F. Claims 3 and 8 are not in improper form

Claims 3 and 8 have been objected to as being in improper form because it is said these claims include a means plus function recitation by virtue of

dependence on claim 2 but define substantial structures, materials, or acts defining the function. Reference is again made by the Examiner to MPEP 2181 (See Non-Final Action November 28, 2008, page 4, fourth paragraph).

We submit that MPEP 2181 does not contain anything germane to the issue of whether it is permissible to further define a means plus function restriction by stating what physical components contribute to providing it in a preferred embodiment. We submit that there is nothing impermissible in so doing and the Examiner has not cited any law to support the point. In fact, it is entirely proper to further restrict the means plus function claims in such manner because the mean plus function language also includes “equivalents thereof” under 35 U.S.C. Section 112, paragraph 6. The dependent structural claims recite more specific embodiments as well as certain additional structural attributes not included in the means plus function language

G. Conclusion

For at least the reasons discussed above, it is respectfully submitted that: 1) claims 1 and 23 are not are not obvious under 35 U.S.C. §103(a) over Eckhouse in view of Berry; 2) claims 1-3 and 8 are not obvious over Eckhouse in combination with Berry and further in view of Gustafsson; 3) claims 10-15, 24 and 25 are not obvious under 35 U.S.C. § 103(a) over Eckhouse in combination with Berry and Gustafsson and further in view of Anderson et al.

and Optoelectronics; 4) claim 18 is not obvious under 35 U.S.C. § 103(a) over Eckhouse in combination with Berry and Gustafsson and further in view of Vassiliadis et al; 5) the specification is not deficient as alleged; and 6) claims 3 and 8 are not objectionable with regard to MPEP 2181. Appellants respectfully request this Honorable Board to reverse the rejection of these claims and direct that the claims be passed to issue.

Appendix
Part A: Claims

1. **(Rejected)** Apparatus for pulsed light cosmetic or therapeutic photo-treatment of the human or animal body, comprising a housing, a gas filled arc lamp light source within said housing operable to produce a pulsed light output, a power supply connected to said arc lamp light source for operation thereof to produce a light output duration of from 10 to 70 msec, a light output aperture defined by said housing, and a filter system for filtering undesired light output wavelengths from said pulse to produce a filtered light pulse for application to said body, at least part of said filter system being interposed between said light source and said aperture, wherein said filter system consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water, said water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to said output aperture, wherein said filtered light pulse has an energy of at least 250 J/cm²/sec.
2. **(Rejected)** Apparatus as claimed in Claim 1, comprising means for defining a flow path for said water, which means is optically transparent at least in a region in which said water acts as said filter, and means for producing a flow of said water through said flow path.

3. **(Rejected)** Apparatus as claimed in Claim 2, wherein said light source forms part of the means defining said flow path for water, whereby said water acts both to filter said light pulse and to cool said light source.
- 4-7. **(Canceled)**
8. **(Rejected)** Apparatus as claimed in claim 2, wherein said flow path forms a closed circuit around which said water circulates.
9. **(Canceled)**
10. **(Rejected)** Apparatus as claimed in Claim 1, further comprising a light guide for transmitting light output from said light source to a treatment site, said light guide having a proximal end receiving light from said aperture and having a distal end for contacting the skin of a patient for said photo-treatment, said light guide distal end being shaped in a convex curve whereby pressing the light guide gently against the skin of the patient reduces the amount of blood in the skin below the light guide.
11. **(Rejected)** Apparatus as claimed in Claim 10, wherein said light guide is shaped as a parallelipedic prism with a bull-nosed projection on said distal end.
12. **(Rejected)** Apparatus as claimed in Claim 1, further comprising a light guide for transmitting light output from said light source to a treatment site, said light guide having a proximal end receiving light from said aperture and having a distal end for contacting the skin of a patient for said photo-treatment, said light guide distal end being shaped in a concave manner whereby to relieve

pressure applied to the skin by the light guide in regions where blood is a target of said light output.

13. **(Rejected)** Apparatus as claimed in Claim 1, further comprising a power supply connected to the light source for providing power input to the light source, wherein said power supply is operable to provide a power output pulse or pulse train to drive said light source to produce said light output pulse or pulse train, during which light output pulse or pulse train for at least 80% of the light output period (i.e. the duration of a single pulse or the aggregate of the duration of the pulses within a pulse train excluding intervals between pulses) the light power output is from 75 to 125% of the time-weighted average light power output during the light output period.

14. **(Rejected)** Apparatus as claimed in Claim 13, wherein for at least 90% of the light output period the light power output is from 75 to 125% of the time-weighted average light power output during the light output period.

15. **(Rejected)** Apparatus as claimed in Claim 13, wherein means is provided for adjusting said time-weighted average light power output.

16-17. **(Canceled)**

18. **(Rejected)** Apparatus as claimed in Claim 1, further comprising a filter mounting for receiving a second filter having high filtration characteristics suitable to pass only selected wavelengths of light so as to dispose said second filter in a light path from said light source which light path also includes said filter comprising water, sensor means for detecting the presence and nature of a

said second filter in said filter mounting, and interlock means for preventing operation of said light source to carry out photo-treatment except when a said second filter appropriate to an intended photo-treatment is present in said mounting and/or for providing an alarm signal if a said appropriate second filter is not present in said mounting.

19-22. **(Canceled)**

22. **(Rejected)** Apparatus as claimed in claim 1, wherein the light source comprises a gas-filled arc lamp.

23. **(Rejected)** Apparatus as claimed in Claim 22, wherein said gas-filled arc lamp is a xenon or krypton lamp

24. **(Rejected)** Apparatus as claimed in claim 13, wherein the power supply is coupled to a capacitor, a charging circuit adapted for charging the capacitor to a preselected voltage, a resistor in series between said capacitor and said light source and a discharge switch operable to change from a non-conductive state to a conductive state to cause said capacitor to discharge said light source and back to said non-conductive state again.

25. **(Rejected)** Apparatus according to Claim 24, wherein the light source is an arc lamp and the power supply comprises a simmer generator adapted for feeding the arc lamp with power at a level which is sufficient to keep the arc in the conductive state.

26-28. **(Canceled)**

Part B: Claim Support and Drawing Analysis

1. An apparatus for pulsed light cosmetic or therapeutic photo-treatment of the human or animal body {**Figures 2 and 3; page 19, line 21 – page 21, line 5**}, comprising a housing {**Figure 2, reference number 20; page 19, line 23**}, a gas filled arc lamp light source {**Figures 1 and 2, reference number 13; page 19, lines 2 and 23**} within said housing operable to produce a pulsed light output {**Figures 6(a)-(c); page 22, lines 1-29**}, a power supply {**Figure 1, reference number 12; page 18, line 29**} connected to said arc lamp light source for operation thereof to produce a light output duration of from 10 to 70 msec, a light output aperture {**Figure 2 and 3, reference number 22; page 20, lines 1-2**} defined by said housing, and a filter system {**Figures 2 and 3, reference number 25; page 20, lines 19-27**} for filtering undesired light output wavelengths from said pulse to produce a filtered light pulse for application to said body, at least part of said filter system being interposed between said light source and said aperture, wherein said filter system consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water {**Figures 2 and 3; page 20, lines 4-5**}, said water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to said output aperture, wherein said filtered light pulse has an energy of at least 250 J/cm²/sec.

2. Apparatus as claimed in Claim 1, comprising means for defining a flow path for said water {**Figures 2 and 3, reference numbers 13 and 24; page 20, lines 4-5**}, which means is optically transparent at least in a region in which said water acts as said filter, and means for producing a flow of said water {**Figure 3, reference numbers 38 and 40; page 20, lines 7-10**} through said flow path.
3. An apparatus as claimed in Claim 2, wherein said light source {**Figures 2 and 3, reference number 13**} forms part of the means defining said flow path for water, whereby said water acts both to filter said light pulse and to cool said light source.
15. An apparatus as claimed in Claim 13, wherein means is provided for adjusting said time-weighted average light power output {**Figures 1 and 6(a)-(c); page 18, line 24 – page 19, line 19 and page 22, lines 1-24**}.
18. An apparatus as claimed in Claim 1, further comprising a filter mounting for receiving a second filter having high filtration characteristics suitable to pass only selected wavelengths of light so as to dispose said second filter in a light path from said light source which light path also includes said filter comprising water {**page 20, line 24 – page 21, line 5**}, sensor means for detecting the presence and nature of a said second filter in said filter mounting, and interlock

means for preventing operation of said light source to carry out photo-treatment except when a said second filter appropriate to an intended photo-treatment is present in said mounting and/or for providing an alarm signal if a said appropriate second filter is not present in said mounting {**page 12, line 21 – page 13, line 28**}.

Part C: Means Plus Function Analysis

2. Apparatus as claimed in Claim 1, comprising means for defining a flow path for said water {**Figures 2 and 3, reference numbers 13 and 24; page 20, lines 4-5**}, which means is optically transparent at least in a region in which said water acts as said filter, and means for producing a flow of said water {**Figure 3, reference numbers 38 and 40; page 20, lines 7-10**} through said flow path.

3. An apparatus as claimed in Claim 2, wherein said light source {**Figures 2 and 3, reference number 13**} forms part of the means defining said flow path for water, whereby said water acts both to filter said light pulse and to cool said light source.

15. An apparatus as claimed in Claim 13, wherein means is provided for adjusting said time-weighted average light power output {**Figures 1 and 6(a)-(c); page 18, line 24 – page 19, line 19 and page 22, lines 1-24**}.

18. An apparatus as claimed in Claim 1, further comprising a filter mounting for receiving a second filter having high filtration characteristics suitable to pass only selected wavelengths of light so as to dispose said second filter in a light

path from said light source which light path also includes said filter comprising water {**page 20, line 24 – page 21, line 5**}, sensor means for detecting the presence and nature of a said second filter in said filter mounting, and interlock means for preventing operation of said light source to carry out photo-treatment except when a said second filter appropriate to an intended photo-treatment is present in said mounting and/or for providing an alarm signal if a said appropriate second filter is not present in said mounting {**page 12, line 21 – page 13, line 28**}.

Part D: Evidence


Appellants do not rely upon any Declarations, Affidavits, or other evidence for purposes of this appeal.

Part E: Related Cases

This application was previously appealed to the Board, Appeal No.: 2006-3215. The Board issued its opinion on September 13, 2007, copy attached, reversing the Examiner's rejection of claims 1-3, 8, 10-15, 18 and 23-25.

For at least the foregoing reasons, Appellants respectfully submit that the claims are clear, definite, and allowable over the references relied upon by the Examiner. Therefore, reversal of the rejections by the Honorable Board is respectfully requested.

Date: Dec 15, 2008 Respectfully submitted,

By: 
Tyson Winarski
Registration No. 41,381

PILLSBURY WINTHROP SHAW PITTMAN LLP
P.O. Box 10500
McLean, Virginia 22102
Main: 703-770-7900
Fax: 703-770-7901
E-mail: tyson.winarski@pillsburylaw.com